UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,207	07/01/2005	Dirk Weber	10191/4226	7657

26646 7590 09/19/2008

KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
PIPALA, EDWARD J	

ART UNIT	PAPER NUMBER
3663	

MAIL DATE	DELIVERY MODE
09/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,207	WEBER ET AL.	
	Examiner	Art Unit	
	EDWARD PIPALA	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-13,17,21,25,27,29,30 and 32-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-13,17,21,25,27,29,30 and 32-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is in response to applicant's amendments and remarks filed 5/20/08.

Claims 11-13, 17, 21, 25, 27, 29-30, 32-41 are presently pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11-13, 17, 21, 25, 27, 29-30 and 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellum (U.S. Pub. 2004/0153244), in view of Rao et al. (U.S. Pub. 2004/0019420).

Independent claim 11 recites a device for classifying at least one object with the aid of an environmental sensor system of a vehicle by classifying the at least one object based on velocity and acceleration of the object, controlling a restraint system as a function of the object classification at least the relative velocity of the object relative to the vehicle, and classifying the at least one object as a first object class of a vehicle and a second object class of a pedestrian. Independent claim 33 recites a method similar to the apparatus of claim 11 in which the restraint system is controlled as a function of the object and the relative velocity with respect to the vehicle

Kellum teaches reducing false alarms in an impact detection system of a vehicle and issuing a warning to a driver, where section [0002], under the heading of background of the invention teaches that a collision warning system (CWS) is intended to mitigate or eliminate vehicle impacts by generating a timely warning to the driver to take evasive action when a sensor capable of detecting objects in the frontal area of the vehicle has determined that an object is present through information related to range, range rate, and azimuth, as well as additional information relating to relative acceleration, the size of the object, the dimensions of the object and the direction of movement. This portion of Kellum concludes with an indication that laser and radar technologies are well known for gathering the above types of information, where sections [0014-0015] further teach an object position tracking block (102), a target identification block (104), a threat assessment block (106), and a driver warning block (108), where the object is detected through either laser or radar detection, where section [0015)] particularly teaches that the target identification block (104) receives input information from the object detection block (102) in order to identify the nature of the objects detected (e.g., size, shape, location, speed, acceleration, etc) and thus determine whether the objects (targets) are potentially in the path of the vehicle, However Kellum does not particularly disclose determining the objects to be of either the vehicle class or a pedestrian class, or an object class wherein the object is securely anchored.

Rao et al. ('420) discloses pre-crash sensing system for a vehicle in which on object sensor (17) determines an object relative velocity signal as part of an object classification signal, where a controller is further used to determine countermeasures with respect to object distance, relative velocity and object classification signal. Furthermore, section [0012] of Rao et al. teaches that as a further aspect of operating the pre-crash sensing system includes

determining the object distance, relative velocity, and classification with an object sensor capable of "determining an object length and object width corresponding to the object classification".

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the length and width based classification system of Rao et al. ('420), within the context of the object detection and driver warning system of Kellum, so as to determine or distinguish between pedestrian and vehicle type objects or targets in the path of the vehicle as part of a collision mitigation or elimination system, by warning the driver according to the relative size and acceleration of an object as part of an impact threat assessment.

Further, with respect to claims 11-13 and 33, in which a device and method for classifying at least one object with respect to its detected velocity and acceleration and their respective reference values as a characteristic of time, please see section 0002 of Kellum, which discloses a collision warning system (CWS) intended to mitigate and/or eliminate vehicle impacts by generating a timely warning to the driver to take an evasive action. Such a vehicle is configured with a sensor (or sensors) that is/are capable of detecting objects in the frontal area of the vehicle. The sensor not only detects the presence of an object, but also provides some quantitative information about the object such as range, range rate, and azimuth position of the object. Additional information related to the object (e.g., a lead vehicle in many instances) may include relative acceleration, the size of the object, the dimensions of the object, the direction of movement of the object, etc. The following section (0003) further discloses the use of a path prediction algorithm and a threat assessment algorithm, which

evaluate the incoming data, analyze the particular situation, and then determine if there is any imminent threat of impacting an object in the frontal area of the vehicle, where many of these algorithms are based on parameters such as "time to impact", "time headway", or perhaps basic vehicle kinematics.

With respect to claim 17 and 21 which recites that the velocity is determined with the aid of a reference velocity wherein the velocity is determined on the basis of a time characteristic of location information, please see the afore mentioned section of section 0002 in which it clearly teaches that typically a vehicle is configured with a sensor (or sensors) that is capable of detecting objects in the frontal area of the vehicle, and that the sensor not only detects the presence of an object but also provides some quantitative information about the object such as range, range rate, and azimuth position of the object. Additionally, information related to the object (e.g., a lead vehicle in many instances) may include relative acceleration, the size of the object, the dimensions of the object, the direction of movement of the object, etc.

With respect to claims 25, 27, 29-30 which recite the use of at least one photonic mixer in a Lidar type environmental sensor system, for haptically outputting information to the driver as a function of object classification, please see sections 0014 and 0015 which clearly disclose object detection in conjunction with threat assessment by determining the location, speed, acceleration, etc. of an object as part of a driver warning system which warns a driver haptically or by a buzzer, warning light or other type of feedback, that there is a likelihood of an impact.

With respect to claims 32-34 which recite a method classifying at least one object based on an object velocity and an object acceleration, wherein the classification includes at least one of a vehicle object class and a pedestrian object class, and an anchored object class, by determining the object velocity and acceleration from at least one signal of an environmental sensor system and subsequently controlling a restraint system as a function of the object classification, and the relative velocity of the object relative to the vehicle, please note that Kellum teaches target identification by considering the size (section 0002) location, speed and acceleration of an object (section 0015), whereas Rao et al. ('420) further teaches considering the length and width of the host and target vehicles [0012], where the classification for small objects may include pedestrians and large objects as vehicles, where a stationary object would potentially pose the greatest threat if found in the path of a vehicle and would have been obvious to one of ordinary skill in the art based on relative object position, velocity and acceleration.

With respect to new dependent claims 34-41 reciting a third securely anchored object class, testing object/roadway position, zero object velocity, controlling the restraint with respect to object classification and the use of at least one of wheel velocity, ABS or tachometer signal from a controller area network (CAN) of the vehicle, please note that Kellum teaches the use of object detection and position tracking information form a vehicle sensor system in which the sensor detects not only the presence of an object but also quantitative information such as range, range rate, and azimuth position of the object, where the end of section [0002] further teaches that additional information about an object including relative acceleration, the size of the object, the dimensions of the object, the direction of movement of the object. Furthermore,

sections [0042-0043] of Rao et al. begin by teaching the use of a speed sensor 22 coupled to a controller 12, that any of a variety of speed sensors could be used including toothed wheels employed on anti-lick brake systems (ABS), and where section [0043] specifically teaches the use of any one or more of a plurality of restraint/countermeasure systems including occupant belt pre-tensioning, airbags, bumper height changing, braking, pre-arming and deployment of interior airbags, etc., in response to inputs from the various sensors based on position and other pertinent data of a target vehicle (object).

Response to Arguments

3. Applicant's arguments filed 5/20/08 have been fully considered but they are not persuasive.

Applicant argues that the Examiner did not sufficiently present a case of *prima facie* obviousness as required under 35 U.S.C. § 103(a) in the combination of Kellum and Rao et al.

Applicant further argues that even in the guidance provided by the Supreme Court in *KSR* it is important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the prior art elements in the manner claimed.

Applicant then argues the claimed features of independent claims 11 and 33 with respect to the classification of objects into either the pedestrian or object class based on their velocity and acceleration, and subsequently controlling a restraint system as a function of the classification and at least one object and the velocity of the object relative to the vehicle.

As already noted above with respect to the rejection of claims 11-13, 17, 21, 25, 27, 29-30 32-41 in the combination of Kellum and Rao et al., Kellum discloses an object detection and position tracking system in a vehicle used to reduce false alarm indications in an impact

detection system, where Rao et al. also makes use of an object sensor system in a vehicle as part of pre-crash sensing in a countermeasure system which activates said countermeasure(s) based on object distance, relative velocity and an object classification signal, and where sections [0011-0013] of Rao et al. teach pre-crash sensing and activating a countermeasure system in response to object length and width, as well as distance and relative velocity. While neither Kellum nor Rao et al. teaches classification of objects into vehicle, pedestrian and securely anchored object classses, it would have been obvious ot one of ordinary skill in the art to use such classifications when determining a restraint/countermeasure system because of the specific teaching of Rao et al. relation to size and relative velocity of detected objects and determinig countermeasures so as to minimize the severity of the collision.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD PIPALA whose telephone number is (571)272-1360. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ejp

/Jack W. Keith/
Supervisory Patent Examiner, Art Unit 3663